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Amendment to the Claims:

This listing of claims replaces all prior versions, and listings, of claims in the application:

1-2. Cancelled

3. (Currently amended) A method as in claim ~~4~~ 6 ~~said second encoding is carried out by an inner coder with a rate substantially close to one, and~~ further comprising an additional coding, carried out by a middle coder which carries out coding with a rate less than or equal to one.

4. (Original) A method as in claim 3 wherein said middle coder comprises a q,n coder which codes blocks of length q to form blocks of length n.

5. Cancelled

6. (Previously presented) A method of encoding a signal, comprising:

obtaining a portion of the signal to be encoded;

first encoding said portion in a way that repeats said portion to form a first encoded portion; and

second encoding said first encoded portion using an encoder that has a rate close to one;

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wherein said second encoding is via an accumulator; and
wherein said second encoding by said accumulator uses a
transfer function of $\frac{1}{1+D}$.

7. (Currently Amended) ~~A method as in claim 5~~ A
method of encoding a signal, comprising:
obtaining a portion of the signal to be encoded;
first encoding said portion using a rate 1 coder, to repeat
said portion to form a first encoded portion;
interleaving said first encoded portion to form an
interleaved portion; and
second encoding said first encoded interleaved portion
using an encoder that has a rate close to ones, wherein said
first encoding, said interleaving, and said second encoding is
done according to a serial concatenated code, and forms a code
that can be iteratively decoded;
wherein said second encoding is via an accumulator; and
wherein said second encoding uses a transfer function of
 $\frac{1}{(1+D+D^2)}$.

8. Cancelled

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9. (Currently Amended) A method as in claim \pm 6 further comprising carrying out at least one additional encoding operation.

10. (Previously Presented) A method as in claim 9 wherein there are x encoding operations and $x > 1$.

11-12. (Cancelled)

13. (Currently Amended) A method as in claim \pm 6 further comprising carrying out a plurality of serially concatenated interleaving operations.

14. (Currently Amended) A method as in claim \pm 6 wherein there are one fewer interleaving operations than coding operations.

15. (Currently Amended) A method as in claim \pm 6 further comprising puncturing bits, at specified intervals, to change an effective rate of the inner coder.

16. (Currently Amended) A method as in claim \pm 6 further comprising coding information on separate branches of a tree structure.

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17-19. (Cancelled)

20. (Currently Amended) A device as in claim ~~19~~ 26 wherein said inner code is within 10% of being rate 1.

21. (Currently Amended) A device as in claim ~~19~~ 26 wherein said inner code is within 1% of being rate 1.

22. (Currently Amended) A system as in claim ~~19~~ 26 wherein said outer coder is a coder which carries out a repetition code.

23-25. (Cancelled)

26. (Currently Amended) ~~A system as in claim 19~~ A coding system, comprising:

an outer coder, having an input which is configured to receive a stream of bits to be coded, to produce a first coded stream of bits at an output thereof at a coding rate less than rate 1;

an interleaver, receiving said first coded bits at its input, and producing second coded bits at an output, according to a specified interleaver function; and

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an inner coder receiving said second bits at an input thereof, and having an output connected to a channel, said inner coder coding the bits according to an inner code which is substantially rate 1, wherein said outer coder, said interleaver and said inner coder form a serially concatenated coder, and which form a code that can be iteratively decoded;

wherein said inner coder is an accumulator which encodes according to the transfer function $\frac{1}{(1+D)}$.

27. (Currently Amended) ~~A system as in claim 19~~ A coding system, comprising:

an outer coder, having an input which is configured to receive a stream of bits to be coded, to produce a first coded stream of bits at an output thereof at a coding rate less than rate 1;

an interleaver, receiving said first coded bits at its input, and producing second coded bits at an output, according to a specified interleaver function; and

an inner coder receiving said second bits at an input thereof, and having an output connected to a channel, said inner coder coding the bits according to an inner code which is substantially rate 1, wherein said outer coder, said interleaver

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and said inner coder form a serially concatenated coder, and
which form a code that can be iteratively decoded;

wherein said inner coder encodes according to a transfer
function $\frac{1}{(1+D+D^2)}$.

28. Canceled

29. (Currently Amended) A system as in claim ~~19~~ 26
further comprising at least one middle coder, wherein said
middle coder operates at a rate which is either less than, or
equal to one.

30. (Original) A system as in claim 29 wherein there
are a plurality of said middle coders.

31. (Original) A system as in claim 30 wherein there
are a plurality of said interleavers, and assuming if x is the
number of coders, then $x - 1$ is the number of interleavers.

32. (Currently Amended) A system as in claim ~~19~~ 26
wherein said outer coder is a concatenation of a plurality of
short block coders.

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33. (Previously Presented) A system as in claim 30 wherein said middle coders are (n,k) coders which receive a block of size k , and convert each said block to a block of size n , according to a predetermined technique.

34. (Currently Amended) A system as in claim ~~19~~ 26 wherein said coding of bits are done in a tree form.

35. (Original) A system as in claim 34 wherein said tree has a separate branch which is encoded separately.

36-37. (Cancelled)

38. (Currently Amended) A system as in claim ~~37~~ 42 further comprising an interleaver associated with the second coder.

39. (Currently Amended) A system as in claim ~~36~~ 42 wherein the second coder is a n,k coder which receives k bits and produces an output of n bits.

40. (Currently Amended) A system as in claim ~~36~~ 42 wherein said first outer coder is a repetition coder.

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41. Canceled

42. (Currently Amended) ~~A system as in claim 41~~ A coding system, comprising:

a first outer coder configured to receive a plurality of bits to be coded;

a second coder, configured to change the bits once coded by the outer coder, in a specified way, at a rate which is less than or equal to one; and

a third rate one inner coder, configured to code the bits from the second coder at a rate, which is substantially rate one, to produce an output signal indicative thereof, and

an iterative decoder, connected to receive said output signal and to iteratively decode the output signal;

wherein said inner coder is an accumulator;

wherein said accumulator has a transfer function $\frac{1}{1+D}$.

43. (Currently Amended) ~~A system as in claim 36~~ A coding system, comprising:

a first outer coder configured to receive a plurality of bits to be coded;

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a second coder, configured to change the bits once coded by the outer coder, in a specified way, at a rate which is less than or equal to one; and

a third rate one inner coder, configured to code the bits from the second coder at a rate, which is substantially rate one, to produce an output signal indicative thereof, and an iterative decoder, connected to receive said output signal and to iteratively decode the output signal;

wherein said inner coder has a transfer function of

$$\frac{1}{(1+D+D^2)}.$$

44.-45. Canceled

46. (Currently Amended) A system as in claim 36 42 wherein said second coder comprises a plurality of said middle coders.

47. (Original) A system as in claim 46 wherein there are also a plurality of interleavers.

48.-49. (Cancelled)

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50. (Currently Amended) A system as in claim 48 42 wherein said inner coder is a digital filter with a specified transfer function.

51. (Currently amended) ~~A system as in claim 48~~ A coding system, comprising:

a first outer coder, receiving a plurality of bits to be encoded, and encoding said bits with a rate less than one to produce a number of bits greater than a number of input bits;

a middle coder, receiving an output of said output coder, said middle coder having an encoding rate less than or equal to one, and producing middle encoded bits; and

a rate one inner coder which has a coding rate which is substantially equal to one, and which produces an output for a channel, said rate one inner coder carrying out coding according to a specified transfer function; and

an iterative decoder, connected to said channel to receive said output, and to iteratively decode the code;

wherein said inner coder has a transfer function of $\frac{1}{1+D}$.

52. (Currently amended) ~~A system as in claim 48~~ A coding system, comprising:

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a first outer coder, receiving a plurality of bits to be encoded, and encoding said bits with a rate less than one to produce a number of bits greater than a number of input bits;

a middle coder, receiving an output of said output coder, said middle coder having an encoding rate less than or equal to one, and producing middle encoded bits; and

a rate one inner coder which has a coding rate which is substantially equal to one, and which produces an output for a channel, said rate one inner coder carrying out coding according to a specified transfer function; and

an iterative decoder, connected to said channel to receive said output, and to iteratively decode the code

wherein said inner coder has a transfer function of

$$\frac{1}{(1+D+D^2)}$$

53. (Currently Amended) A system as in claim 48 51 wherein said middle coder has a rate of one and further comprising an interleaver associated with said middle coder.

54. (Currently Amended) A system as in claim 48 51 wherein said middle coder comprises at least one additional coder and at least one interleaver, said additional coder having

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a rate less than one and coding according to an (n,k) code which produces blocks of size n for input blocks of size k .

55. (Currently Amended) A system as in claim ~~48~~ 51 wherein said outer coder is a repetition coder.

56. (Currently Amended) A system as in claim ~~48~~ 51 wherein said coding system is arranged as a tree, and further comprising an additional branch on the tree, both the first branch and the additional branch extending directly from input to output without recursing back or recombining with another branch.

57. (Original) A system as in claim 56 wherein said inner coder is an accumulator, and said additional branch includes an additional accumulator thereon.

58. (Currently Amended) A system as in claim ~~48~~ 51 wherein said rate one inner coder is a linear coder.

59. (Currently amended) A method of sending data over a channel comprising:

obtaining original digital data to be sent over a channel;

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first encoding said data using an outer coder with a rate less than one, to produce outer coded data having additional bits beyond bits of the original digital data;

second interleaving said data using an interleaver which rearranges the bits according to a specified matrix; and

inner coding the interleaved bits to form an output stream having the same number of bits as the interleaved bits according to a specified inner coding technique which is of the form from the group consisting of $N/(1+D)$, or $N(1+D+D^2)$ and to produce output data,

said output data being produced by a linear connection between each element which extends directly from input to output without recombinations or branches back to previous coding elements; and ~~an iterative decoder~~ iteratively decoding, ~~connected to receive said output data received over a channel, and to iteratively decode the output data.~~

60. (Previously Presented) A method as in claim 59 wherein said first decoding, interleaving and inner coding is carried out in a single tree from beginning to end.

61. (Currently amended) A method as in claim 59 wherein said ~~first encoding said interleaving and~~ said inner coding is carried out in two separate branches on a single tree.

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62. (Original) A method as in claim 59 further comprising a middle coding operation, said middle coding operation operating at a rate less than or equal to one using a specified coding technique.

63. (Original) A method as in claim 62 wherein said specified coding technique uses a double accumulator.

64.-65. Canceled.

66. (Original) A method as in claim 59 further comprising, at another end of the channel, decoding said data using a posterior decoding techniques.

67. (Original) A method as in claim 59 further comprising, at the other end of the channel, decoding the data by using a Tanner graph representation.

68. (Original) A method as in claim 67 wherein said decoding comprises receiving a code and putting said code on a Tanner graph, iterating values of edge messages of the Tanner graph according to a specified rule by a specified number of times, and using the iterated values to determine an answer.